SO_2 PROGRAM

408 Units Underwent Annual Reconciliation for SO_2 in 1998

There were 398 affected utility units and 10 opt-in units that underwent annual reconciliation in 1998 to determine whether sufficient allowances were held to cover emissions. These 408 units are listed in Appendix A and include 263 utility units specifically required to participate during Phase I, 135 utility units not initially required to participate until Phase II, but electing to participate early as part of multi-unit compliance plans[1], and 10 other units that elected to join as part of the Opt-in Program[2]. There were 8 fewer units undergoing annual reconciliation than in 1997.

1998 SO_2 Emissions Target was 6.97 Million Tons

The number of allowances allocated in a particular year, the amount representing that year's allowable SO_2 emissions level, is the sum of allowance allocations granted to sources under several provisions of the Act. In 1998, the emissions target established by the program for the 408 participating units was 6.97 million tons. However, the total allowable SO_2 emission level in 1998 was actually 14.93 million tons, consisting of the 6.97 million 1998 allowances granted through the program and an additional 7.96 million allowances carried over, or banked, from 1997.

The initial allocation and the allowances for substitution and compensating units represent the basic allowances granted to units that authorize them to emit SO_2 under the Acid Rain Program. Additional allowances for the year 1998 were also made available through the allowance auctions, held annually since 1993. Other allowances issued in 1998 were from special provisions in the Act, which are briefly explained in Exhibit 2 on the following page. In addition, any allowances carried over from previous years (banked allowances) are available for compliance and included in the allowable total.

Beginning in the year 2000 at the onset of Phase II, the volume of allowances allocated annually to the Phase I units will be reduced and the requirement to hold allowances will be extended to

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[1] During Phase I of the of the Acid Rain Program, a unit not originally affected until Phase II may elect to enter the program early as a substitution unit or a compensating unit to help fulfill the compliance obligations for one of the Table 1 units targeted by Phase I. A unit brought into Phase I as a substitution unit can assist a Table 1 unit in meeting its emissions reductions obligations. Utilities may make cost-effective emissions reductions at the substitution unit instead of at the Table 1 unit, achieving the same overall emissions reductions that would have occurred without the participation of the substitution unit. A Table 1 unit may designate a Phase II unit as a substitution unit only if both units are under the control of the same owner or operator. Additionally, Table 1 units that reduce their utilization below their baseline may designate a compensating unit to provide compensating generation to account for the reduced utilization of the Table 1 unit. (A unit's baseline is defined as its heat input averaged over the years 1985-1987). A Table 1 unit may designate a Phase II unit as a compensating unit if the Phase II compensating unit is in the Table 1 unit's dispatch system or has a contractual agreement with the Table 1 unit, and the emissions rate of the compensating unit has not declined substantially since 1985. See Appendix B-1 for the relationship of these units to their Table 1 counterparts.

[2] The Opt-in Program gives sources not required to participate in the Acid Rain Program the opportunity to enter the program on a voluntary basis, install continuous emission monitoring systems (CEMS), reduce their SO_2 emissions, and receive their own allowances.

smaller, cleaner plants. Nationwide, the cap for all utilities with an output capacity of greater than 25 megawatts will be 9.48 million allowances from 2000-2009. In 2010, the cap will be reduced further to 8.95 million allowances, a level approximating one half of industry-wide emissions in 1980.

SO_2 COMPLIANCE RESULTS

Phase I Units Better 1998 SO_2 Allowable Emissions Level by 24 Percent

The Phase I units affected in 1998 emitted at a level approximately 24 percent below 1998 allocations, as shown in Exhibit 3. This percentage is about the same as in 1997, with both emissions and allocations registering slight decreases. Appendix B-3 reports the 1998 emission and utilization levels for all Phase I affected units, as well as a comparison to these levels in 1997.

Relative to 1997, the 263 Table 1 units decreased their emissions by about 110,000 tons, or more than two percent in 1998, while increasing their utilization by just over one half of one percent. The 4.7 million tons emitted by these Table 1 units were still substantially below their 1998 allocation of 5.6 million allowable tons.

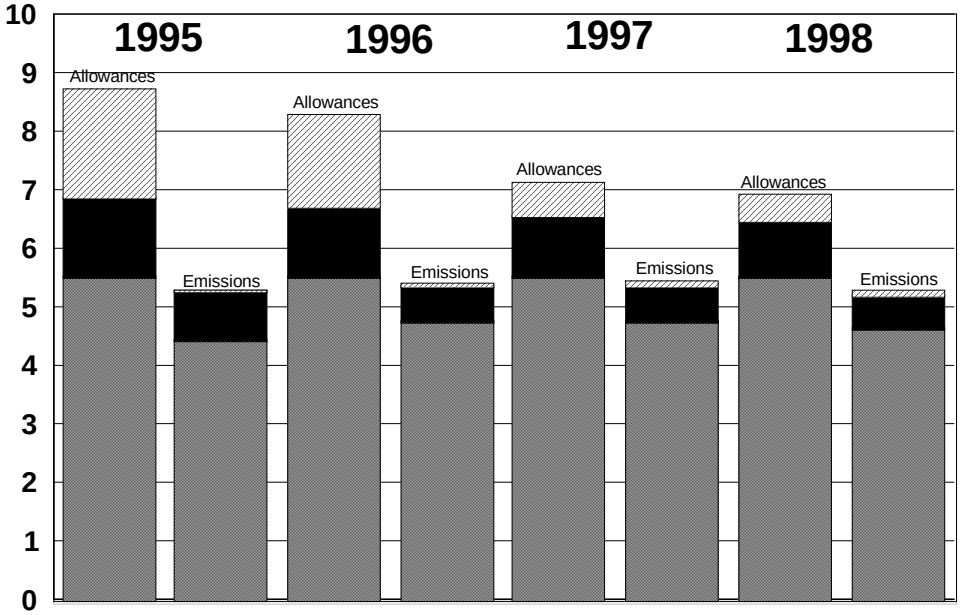
Exhibit 2
Origin of 1998 Allowable Emissions Level

Type of Allowance Allocation	Number of Allowances	Explanation of Allowance Allocation Type
Initial Allocation	5,550,820	Initial Allocation is the number of allowances granted to units based on their historic utilization, emissions rates specified in the Clean Air Act and other provisions of the Act.
Phase I Extension	178,211	Phase I Extension allowances are given to Phase I units that reduce their emissions by 90 percent or reassign their emissions reduction obligations to units that reduce their emissions by 90 percent.
Allowances for Substitution Units	948,708	Allowances for Substitution Units are the initial allocation granted to Phase II units which entered Phase I as substitution units.
Allowance Auctions	150,000	Allowance Auctions provide allowances to the market that were set aside in a Special Allowance Reserve when the initial allowance allocation was made.
Allowances for Compensating Units	15,838	Allowances for Compensating Units are the initial allocation granted to Phase II units which entered Phase I as compensating units.
Opt-in Allowances	97,932	Opt-in Allowances are provided to units entering the program voluntarily.
Small Diesel Allowances	27,656	Small Diesel Allowances are allocated annually to small diesel refineries that produce and desulfurize diesel fuel during the previous year. These allowances can be earned through 1999.
TOTAL 1998 ALLOCATION	**6,969,165**	
BANKED 1997 ALLOWANCES	7,959,676	Banked Allowances are those held over from 1995 through 1997 which can be used for compliance in 1998 or any future year.
TOTAL 1998 ALLOWABLE	**14,928,841**	

Substitution and compensating units in 1998 expended about the same percentage of their annual allocation as in 1997. In 1998, these 135 units were responsible for emitting approximately 550,000 tons of SO_2, about 58 percent of their 950,000 allocation. In 1997, 153 substitution and compensating units emitted approximately 620,000 tons of SO_2, or 60 percent of their 1.04 million allowable level.

Three new opt-in units joined the program in 1998, raising the total allocation to 98,000 allowances and the emissions level to 80,000 tons. The percentage of emissions to allowances allocated to opt-in units in 1998 increased by approximately 1% compared to 1997.

Exhibit 3
Summary of SO2 Emissions versus Allocations
(Millions of Tons)



	'95Allocation	'95Emissions	'96Allocation	'96Emissions	'97Allocation	'97Emissions	'98Allocation	'98Emissions
Table 1 Units	5.55	4.45	5.55	4.77	5.55	4.77	5.55	4.66
S & C Units	1.33	0.85	1.18	0.63	1.04	0.62	0.95	0.55
Other	1.86	0.00	1.57	0.04	0.56	0.08	0.45	0.08
TOTALS	8.74	5.30	8.30	5.44	7.15	5.47	6.95	5.29

Deducting Allowances for Compliance

The total number of allowances deducted in 1998 was 5,300,861 which represents approximately 76 percent of all 1998 allowances issued. Almost all (99.95 percent) of the deducted allowances were for emissions. Exhibit 4 displays these allowance deductions, as well as the remaining bank of 1995 through 1998 allowances.

At an individual unit, the number of allowances surrendered was equal to the number of tons emitted at the unit, except where the unit shared a common stack with other units. For the purposes of surrendering allowances for emissions at a common stack, the utility was allowed to choose the proportion of allowances deducted from each unit sharing the stack, as long as enough allowances were surrendered to cover the total number of tons emitted. If no apportionment was made, EPA deducted allowances equally among the units sharing the stack to cover total emissions reported by the stack. Appendix B-4 reflects the deductions for emissions at each unit after the common stack apportionment was made. Units sharing a common stack are listed directly under the entry for their common stack.

Under the Acid Rain Program, certain units applied for and received approval of Phase I Extension plans during the Phase I permitting process. These units fell into two categories: "control units" which were required to cut their emissions by 90 percent using qualifying technology[3] by 1997, and "transfer units" which reassigned their emissions reduction obligations to a control unit. Both kinds of units received extra SO_2 emissions allowances to cover the SO_2 they emitted beyond their basic Phase I allocations during 1995 and 1996. In addition, the control units were given Phase I extension allowances for 1997, 1998, and 1999. A total of 3.5 million allowances was distributed to all Phase I extension control and transfer units[4].

For 1998, all 19 control units demonstrated meeting the 90 percent reduction requirement and, therefore, did not surrender any 1998 extension allowances. The 1998 tonnage emissions limitation, though, was exceed by five control units and eleven transfer units and resulted in a surrender of a total of 99,240 vintage 1999 allowances. The deduction amounts for each Phase I extension unit are included in Appendix B-2.

SO_2 ALLOWANCE MARKET

The flexibility provided by the Acid Rain Program enabled the 408 units affected in 1998 to pursue a variety of compliance options to meet their SO_2 reduction obligations, including scrubber installation, fuel switching, energy efficiency, and allowance trading. The presence of the allowance market has given some sources the incentive to overcontrol their SO_2 emissions in order to bank their allowances for use in future years. Other sources have been able to postpone and possibly avoid expenditures for control by acquiring allowances from sources that overcontrolled. The flexibility in compliance options is possible because of the accountability provided through strict monitoring requirements for all affected units that ensure one allowance is equivalent to one ton of SO_2. The program's flexibility enabled all 408 sources to be in compliance in 1998 and significantly reduced the cost of achieving these emissions reductions as compared to the cost of a technological mandate.

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[3]Qualifying technology is defined in 40 CFR 72.2

[4] Beginning in 1997, each of the 19 units designated as control units was required to show it had reduced its annual emission by at least 90 percent using qualifying control technology. If a unit could not make this demonstration, all or a portion of the extension allowances it received for the year under the Phase I Extension provisions were required to be surrendered. In addition, also beginning in 1997, each of the same 19 control units and each of the 61 other units designated as transfer units was required to meet a tonnage emission limitation approved in its permit. A unit that exceeded its limitation was required to surrender allowances for the following year.

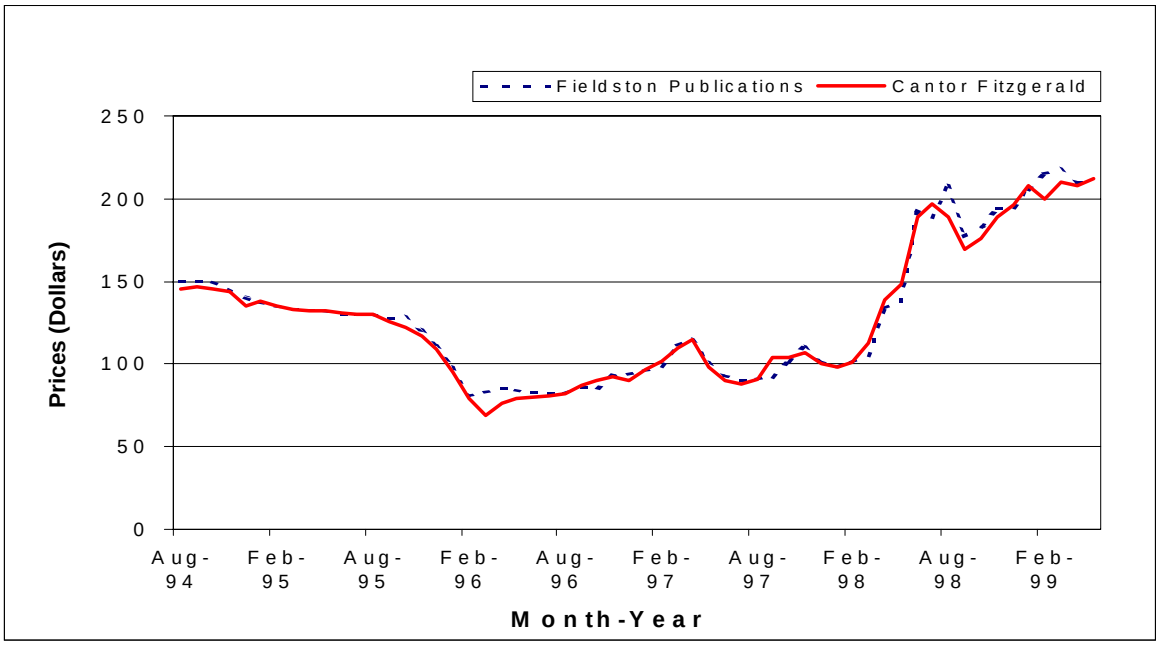
Exhibit 4
SO_2 Allowance Reconciliation Summary

Total Allowances Held in Accounts as of 3/1/99 (1995 through 1998 Vintages)*	**14,928,841**
Table 1 Unit Accounts	8,585,043
Substitution & Compensating Unit Accounts	1,306,220
Opt-in Accounts	83,962
Other Accounts**	4,953,616
1998 Allowances Deducted for Emissions	**5,298,498**
Table 1 Unit Accounts	4,664,898
Substitution & Compensating Unit Accounts	553,349
Opt-in Unit Accounts	80,251
1998 Allowances Deducted Under Special Phase I Provisions***	**2,363**
Table 1 Unit Accounts	65
Substitution & Compensating Unit Accounts	1,755
Opt-in Unit Accounts	543
Banked Allowances	**9,627,980**
Table 1 Unit Accounts	3,920,080
Substitution & Compensating Unit Accounts	751,116
Opt-in Unit Accounts	3,168
Other Accounts**	4,953,616

* The number of allowances held in the Allowance Tracking System (ATS) accounts equals the number of 1998 allowances allocated (see Exhibit 2) plus the number of 1997 banked allowances. March 1, 1999 represents the Allowance Transfer Deadline, the point in time at which the 1998 Phase I affected unit accounts are frozen and after which no transfers of 1995 through 1998 allowances will be recorded. The freeze on these accounts is removed when annual reconciliation is complete.
** Other accounts refers to general accounts within the ATS that can be held by any utility, individual or other organization, and unit accounts for units not affected in Phase I.
***Allowances were deducted for both underutilization and state cap provisions in 1998 (see Appendix B-4 for a thorough explanation).

The marginal cost of reducing a ton of SO_2 from the utility sector should be reflected in the price of an allowance. The cost of reductions continues to be lower than anticipated when the Clean Air Act Amendments were enacted, and the price of allowances reflects this. The cost of compliance was initially estimated at $400-1000/ton, but was $207/ton at the 1999 allowance auction. Prices have remained in the $205 to $215 range since January of 1999. Some market observers believe lower than expected allowance prices during the first several years of the program were due primarily to lower than expected compliance costs and larger than expected emission reductions, which have increased the supply of allowances and put downward pressure on prices. Exhibit 5 displays the price trend since mid-1994, based on monthly price reports from Cantor Fitzgerald Environmental Brokerage Services, and a market survey conducted by Fieldston Publications.

Exhibit 5
SO_2 Allowance Prices



Activity in the allowance market created under the Acid Rain Program remained strong in 1998, with 1,584 transactions moving about 13.5 million allowances in the Allowance Tracking System (ATS), the accounting system developed to track holdings of allowances. In terms of economically significant transfers, or those between unrelated parties, the volume of allowances transferred rose from 7.9 million in 1997 to 9.5 million in 1998. A record 70 percent of annual activity consisted of allowances transferred between economically distinct organizations, with more than half representing allowances directly acquired by utilities.

The most active market segment in 1998 in terms of allowance volume was composed of exchanges between brokers/traders and utilities, accounting for 6.3 million allowances. The next most active was the reallocation category, which covered an additional 3.2 million allowances. The category of transfers between unrelated utilities increased to 1.9 million allowances.

All transactions, along with data on account balances and ownership, are posted on the Acid Rain Division's Internet site (www.epa.gov/acidrain) on a daily basis in order to better inform trading participants. Also available are cumulative market statistics and analysis.

Exhibit 6
Volume of SO_2 Allowances in Economically Significant Transfers